User Manual

-Installation
-Operation

SR-13kW-TL
SR-17kW-TL
SR-20kW-TL

Catalogue

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1. Notes on this manual

1.1 General notes

The main purpose of this User's Manual is to provide instructions and detailed procedures for installing, operating, maintaining, and troubleshooting the following three types of Z10 series Solar Inverters:

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

- Z10I13KDT
- Z10I17KDT
- Z10I20KDT

1.2 Please keep this user manual available at all times in case of emergency.

1.3 Symbols Used

WARNING

WARNING indicates a hazardous situation which, if not avoided, can result in death or serious injury or moderate injury.

CAUTION

CAUTION indicates a hazardous condition which, if not avoided, can result in minor or moderate injury.

NOTICE

NOTICE indicates a situation that can result in property damage, if not avoided.

1.4 Target Group

Chapter 1, 2, 3, 4, 7, 8, 9, 10 and chapter 11 are provided for anyone who is intending to use a Z10 Series Grid-tied Solar Inverter. Before any further action is taken, the operators must first read all safety regulations and be aware of the potential danger when operating high-voltage devices. Operators must also have a complete understanding of this device's features and functions.

WARNING

Do not use this product unless it has been successfully installed by qualified personnel in accordance with the instructions in Chapter 5, "Installation".

- Chapter 5 and Chapter 6 are only for qualified personnel who are intended to install or uninstall the Z10 Series Grid-tied Solar Inverter. Installation must be suitable for the on-site conditions and comply with local regulations and technical rules.

NOTICE

Qualified personnel means he/she has a valid license from the local authority in:

- Installing electrical equipment and PV power systems (up to 1000 V).
- Applying all relevant installation codes.
- Analyzing and reducing the hazards involved in performing electrical work.
- Selecting and using Personal Protective Equipment (PPE).

2. Preparation

2.1 Safety Instructions

DANGER

DANGER due to electrical shock and high voltage

DO NOT touch the operating component of the inverter, it might result in burning or death.

TO prevent risk of electric shock during installation and maintenance, please make sure that all AC and DC terminals are unplugged.

DO NOT remains close to the instruments while there are severe weather conditions including storms, lightning etc.

WARNING

The installation, service, recycling and disposal of the inverters must be performed by qualified personnel who must comply with national and local standards and regulations. Please contact your dealer to obtain details about an authorized repair facility if the inverter requires maintenance or repair. Any unauthorized activities including the modification of product functionality of any kind will affect the extent of the warranty; Such actions may result in Zeus Appollo Solar not accepting any responsibility for that warranty.

NOTICE

Public utility only

The PV inverter is designed to feed AC power directly into the public utility power grid; do not connect the AC output of the device to any private AC equipment.

CAUTION

The PV inverter will become hot during operation; please don’t touch the heat sink or adjacent surface during or shortly after operation.
Risk of damage due to modifications. Never modify or manipulate the inverter or other components of the system.

2.2 Explanations of Symbols on Inverter

Symbol	Description
	Dangerous electrical voltage This device is directly connected to public grid, consequently all work on the inverter shall only be carried out by qualified personnel.
	DANGER to life due to high electrical voltage! There might be residual currents present within the inverter because of large capacitors. Wait 10 MINUTES before you remove the front lid.
	NOTICE, danger! This device directly connected with electricity generators and the public grid.
	Danger of hot surface The components inside the inverter will generate heat during operation, DO NOT touch aluminum housing during operation.
	An error has occurred Please go to Chapter 8 “Trouble Shooting” to remedy the error.
	This device SHALL NOT be disposed of in residential waste Please go to Part 9 “Recycling and Disposal” for correct disposal management.
	Without Transformer This inverter does not use a transformer for the isolation function.
	CE Mark Equipment with the CE mark fulfils the basic requirements of the Guidelines Governing Low-Voltage and Electromagnetic Compatibility.
	No unauthorized perforations or modifications Any unauthorized perforations or modifications are strictly forbidden, if any defect or damage (device/person) occurs,BLD Solar will not accept any responsibility for it.

3. Product Information

3.1 Overview

- Industrial Layout

- Excellent Heat Elimination
- Effective Shield For DC/AC/Communication Connections

3.2 Major Characteristics

Z10 series inverter has following characteristics which make Z10 series inverter “High Efficiency, High Reliability, High Cost Effective Ratio”

- Complies with multiple safety regulations of European, Asia Pacific and Oceanian countries.
- Double MPPT Tracking, MPPT tracking accuracy up to 99.9%.
- Max. Efficiency 98.2%, European Efficiency 97.8%.
- Professional radiating design, protection Level IP65, which will ensure that the unit will perform correctly in severe outdoor conditions.
- Complete safety protection, with an integrated DC switch.
- Flexible input and output connections which support RS485, Ethernet and USB communication.
- Transformerless design and high power density, ensuring lighter and more convenient for installation.

3.3 Technical Data

Type	13K-TL	17K-TL	20K-TL
Input (DC)			
Max. PV Power	13500W	17600W	21200W
Max DC Voltage	1000V	1000V	1000V
Nominal DC Voltage	640V	640V	640V
Operating MPPT Voltage Range	250-800V	250-850V	250-850V
MPPT Voltage Range at Nominal Power	400-800V	440-850V	480-850V
Start up DC Voltage	300V	300V	300V
Turn off DC Voltage	250V	250V	250V
Max. DC Current (A/B)	22A/11A	22A/22A	22A/22A
Max. Short Circuit Current for each MPPT	25A/15A	25A/25A	25A/25A
Number of MPP trackers	2	2	2
Number of DC Connection	A:3/B:3	A:3/B:3	A:3/B:3
DC Connection Type	MC4 connector	MC4 connector	MC4 connector
Output (AC)			
Max. AC Apparent Power	13000VA	17000VA	19200VA
Nominal AC Power (cos phi = 1)	13000W	17000W	19200W
Nominal AC Voltage	3/N/PE; 220/380V 3/N/PE; 230/400V 3/N/PE; 240/415V	3/N/PE; 220/380V 3/N/PE; 230/400V 3/N/PE; 240/415V	3/N/PE; 220/380V 3/N/PE; 230/400V 3/N/PE; 240/415V
Nominal Grid Frequency	50Hz/60Hz	50Hz/60Hz	50Hz/60Hz
Max. AC Current	20.0A	26.0A	29.0A
Grid Voltage Range*	185-276V	185-276V	185-276V
Grid Frequency Range*	45-55Hz/55-65Hz	45-55Hz/55-65Hz	45-55Hz/55-65Hz
Power Factor	0.9i…1…0.9c	0.9i…1…0.9c	0.9i…1…0.9c
Total Harmonic Distortion (THD)	<2%	<2%	<2%
Feed in Starting Power	60W	60W	60W
Night time Power Consumption	<1W	<1W	<1W
Standby Consumption	<12W	<12W	<12W

AC Connection Type	Plug-in connector	Plug-in connector	Plug-in connector
Type	**13K-TL**	**17K-TL**	**20K-TL**
Efficiency			
Max. Efficiency	98.0%	98.1%	98.2%
Euro Efficiency	97.5%	97.6%	97.8%
MPPT Efficiency	99.9%	99.9%	99.9%
Safety and Protection			
DC Insulation Monitoring	Yes		
DC Switch	Optional		
Residual Current Monitoring Unit (RCMU)	Integrated		
Grid Monitoring with Anti-islanding	Yes		
Protection Class	I (According to IEC 62103)		
Overvoltage Category	PV II / Mains III (According to IEC 62109-1)		
Reference Standard			
Safety Standard	EN 62109, AS/NZS 3100		
EMC Standard	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61000-3-11, EN 61000-3-12		
Grid Standard	VDE-AR-N-4105, VDE 0126-1-1, RD1699, G59/2, AS4777, CEI0-21, CQC		
Physical Structure			
Dimensions (WxHxD)	575x655x240mm		
Weight	44.5kg	45kg	45kg
Environmental Protection Rating	IP 65 (According to IEC 60529)		
Cooling Concept	Fan cooling		
Mounting Information	Wall bracket		
General Data			
Operating Temperature Range	-20°C to +60°C(derating above 45℃)		
Relative Humidity	0% to 98%, no condensation		
Max. Altitude (above sea level)	2000m		
Noise Level	<45dB (with fan<50dB)		
Isolation Type	Transformerless		
Display	800x480 TFT Graphic Display		
Data Communication Interfaces	RS485 (Wi-Fi, GPRS optional)		
Computer Communication	RS232 (USB)		
Standard Warranty	5 Years (10 years optional)		

*The AC voltage and frequency range may vary depending on the specific country grid.

4. Packing checklist

4.1 Assembly parts

After you receive the Z10 series inverter, please check to see if there is any damage to the carton, and then examine the inverter and accessories for any visible external damage. Contact your dealer if anything is damaged or missing. . We will be glad to assist you if required.

A	B	C	D
E	F	G	H
I	J		

Object	Quantity	Description
A	1	Z10 series inverter
B	1	Wall mounting bracket
C	1	User manual
D	4	Screws (ST6x50)
E	4	Expansion tubes
F	1	AC cover

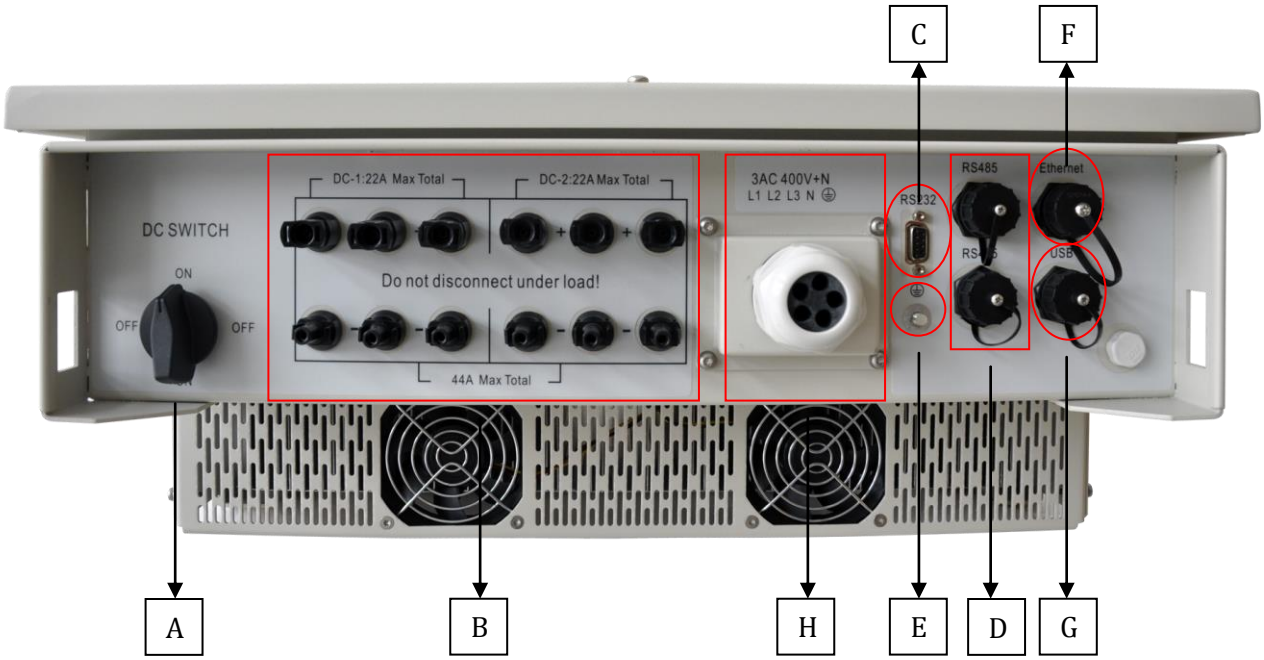
G	6	DC connectors (6 x positive,6 x negative)
H	1	Ground nut (M6)
I	5	Cord end terminals
J	4	Screws (M4X12)

4.2 Product Appearance

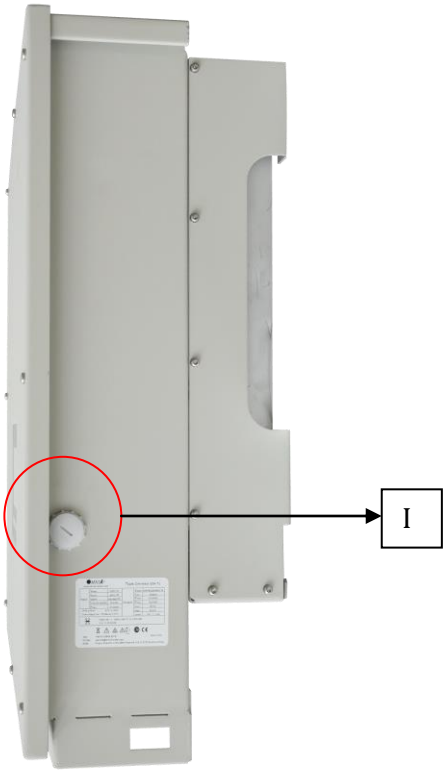
- Front

Object	Description
A	LED light(Green) – RUN
B	LED light(Red) – FAULT
C	LED light(Yellow) – COM
D	< left choice
E	> Right choice
F	∧ up choice
G	∨ down choice
H	Ok identify key

- Bottom



- Left and right

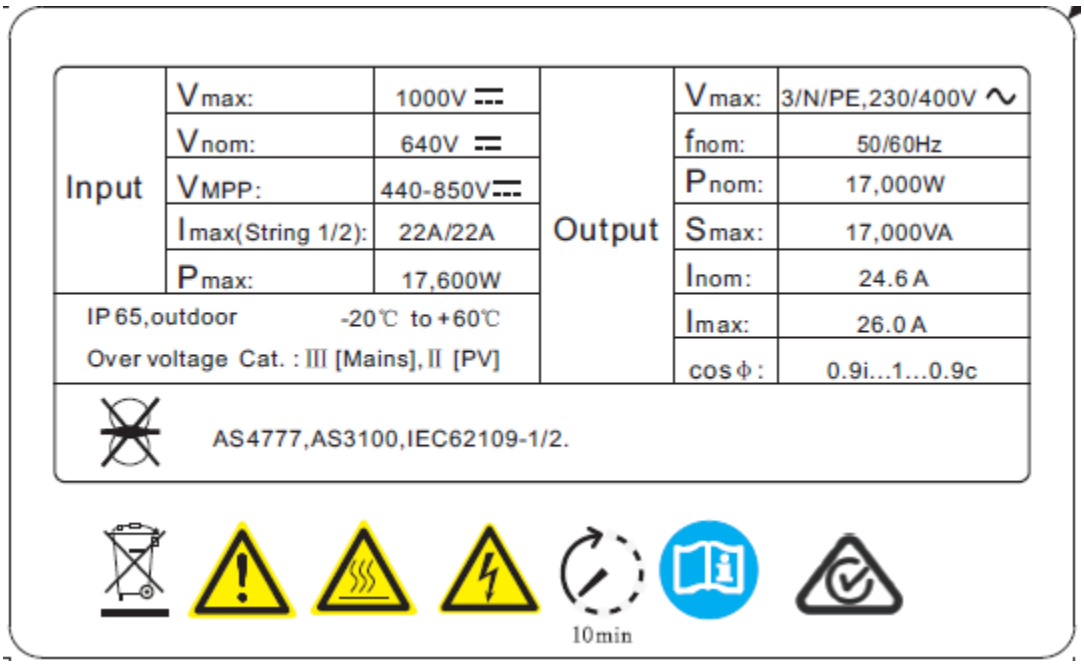


Object	Description

A	DC switch
B	Plug connectors for DC input.
C	RS232 interface
D	RS485 interface
E	Earthing
F	Ethernet interface
G	USB interface
H	Terminal for grid connection (AC output)
I	Update and reset switch for display

4.3 Product Identification

You can identify the inverter by the side name plate. Information such as the type of inverter, as well as the inverter specifications are contained on the side name plate. The name plate is on the middle part of the right hand side of the inverter housing. And the following figure is an example of the side name plate on the Z10I17KDT



4.4 Further Information

If you have any further questions concerning the type of accessories or installation, please check our website or contact our service hotline.

5. Installation

5.1 Safety

DANGER

DANGER to life due to potential fire or electricity shock.
DO NOT install the inverter near any flammable or explosive items.
This inverter will be directly connected with a HIGH VOLTAGE power generation device, the installation must be performed by qualified personnel only in compliance with national and local standards and regulations.

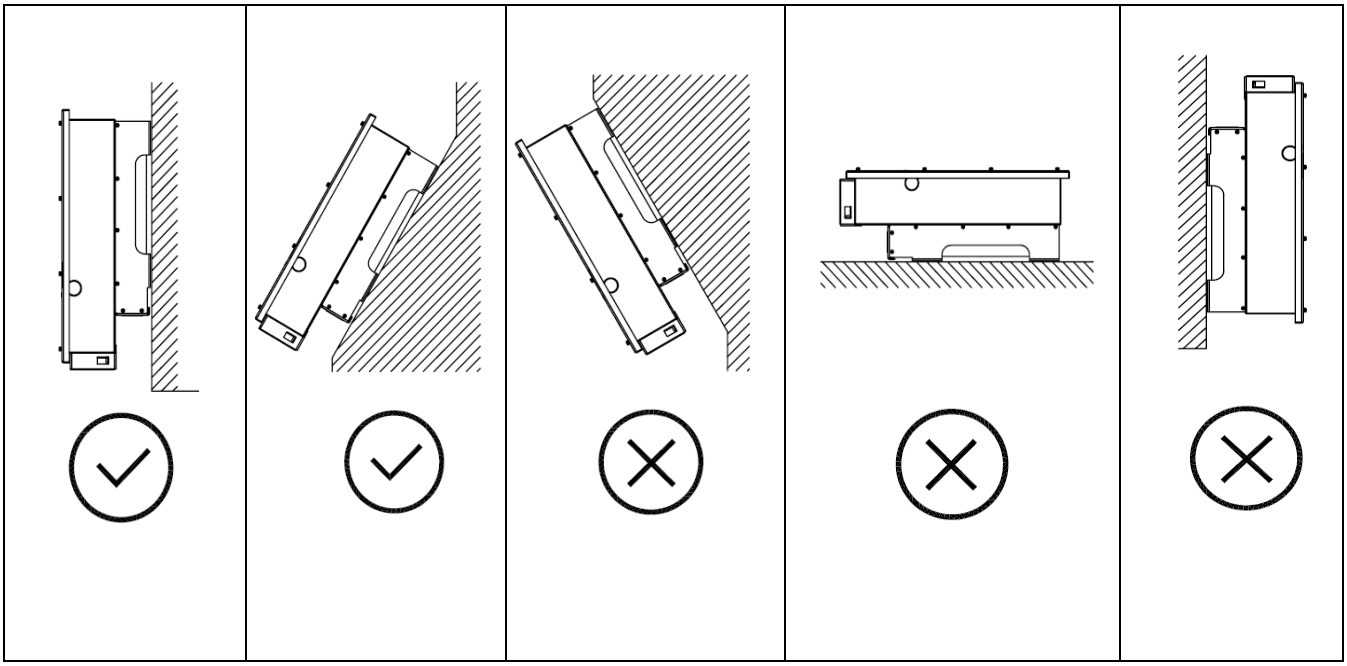
NOTICE

NOTICE An inadequate or incorrect installation may impact on the published lifespan of the inverter.
An Installation under the direct sun is not recommended.
The installation site **MUST** have adequate ventilation.

5.2 Dimensions, weight

Model	weight	Dimension (L×W×D)
Z10I13KDT	44.5kg	575mm×650mm×240mm
Z10I17KDT	45kg	575mm×650mm×240mm
Z10I20KDT	45kg	575mm×650mm×240mm

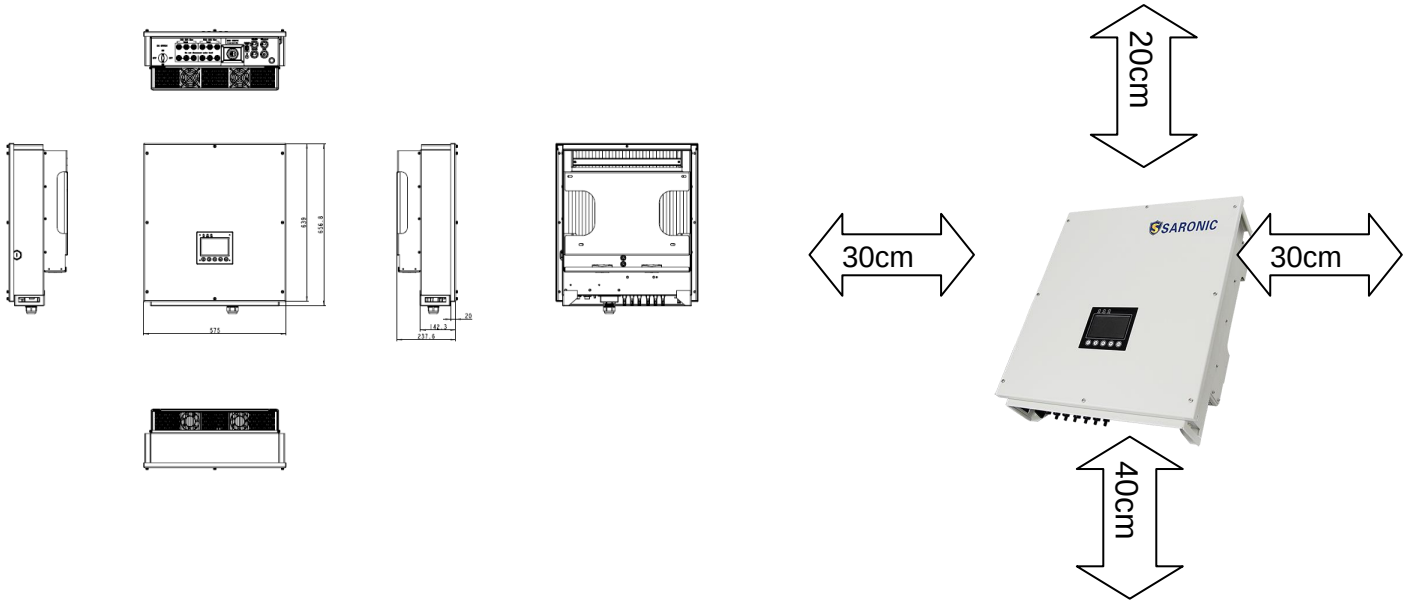
5.3 Mounting Instructions



- Z10 series inverter is designed for interior and exterior installation
- Please mount the inverter in the direction as illustrated above
- It is recommended that the inverter is installed vertically, with a max.15 degrees backwards tilt.
- In order to view the LCD display and undertake maintenance activities, please install the inverter at eye level.
- Ensure that the wall selected for installation is strong enough the mounting screws and can bear the weight of the inverter
- Ensure the device is properly fixed to the wall
- It is not recommended that the inverter is exposed to strong sunshine, because the excess heat might lead to a power reduction
- The ambient temperature of installation site should be between -20 °C and +60 °C (between -4 °F and 140 °F)
- Make sure the ventilation of the installation location, insufficient ventilation may reduce the performance of the electronic components inside the inverter and shorten the life of the inverter

5.4 Safety Clearance

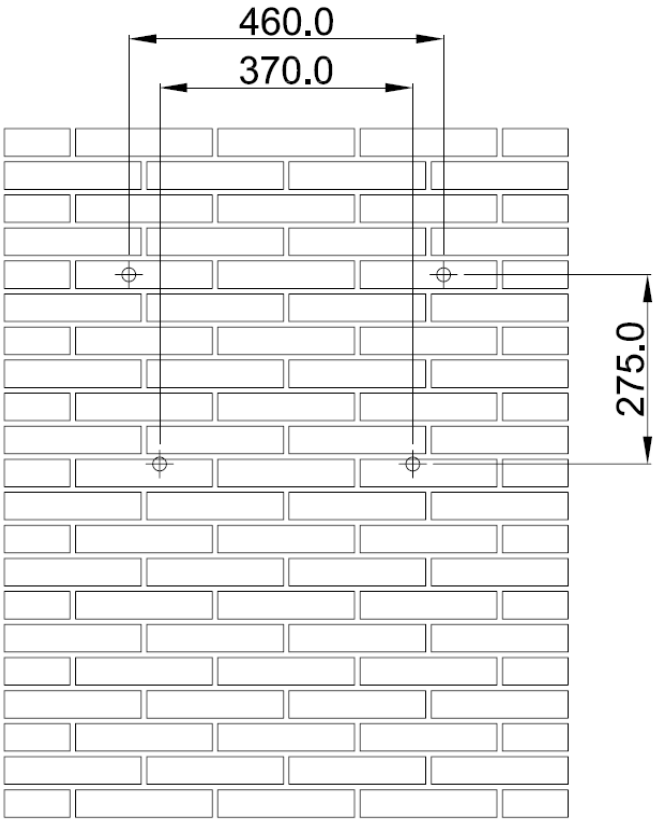
Observe the following minimum clearances to walls, other devices or objects to guarantee sufficient heat dissipation and enough space for pulling the electronic solar switch handle.



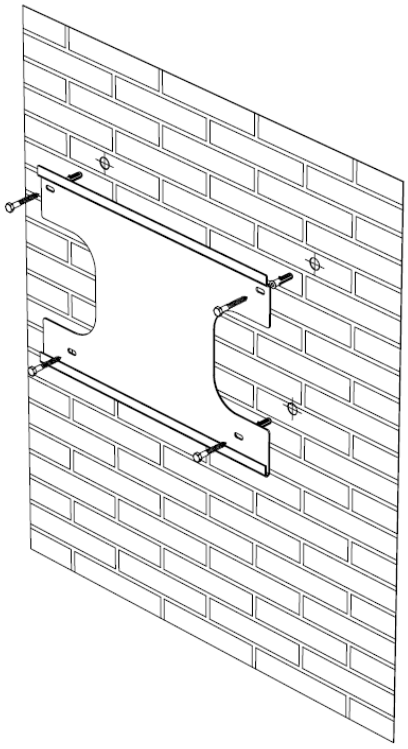
Direction	Minimum clearance
Above	20 cm
Below	40 cm
Sides	30 cm

5.5 Mounting Procedure

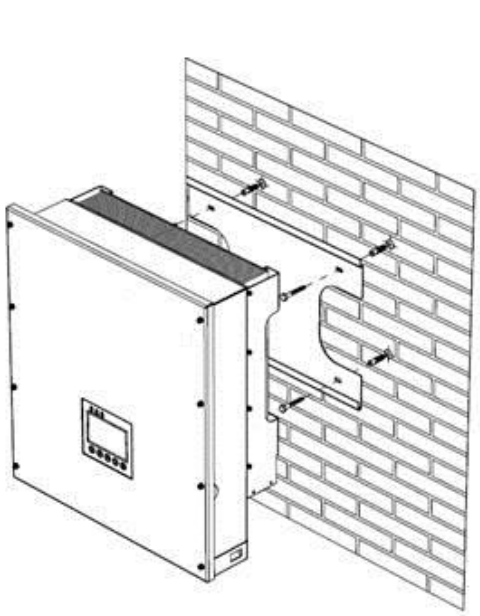
1) Mark 4 positions of the drill holes on the wall according to the paper installation position scale packed in the carton box.

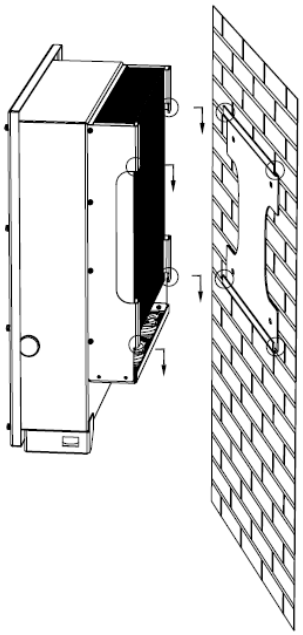


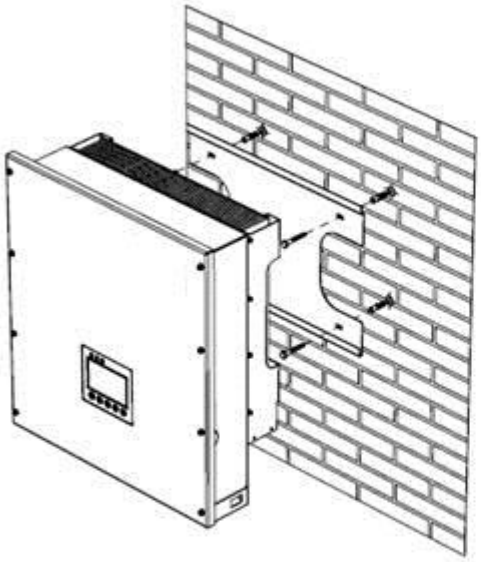
2) Then where the wall is marked, drill 4 holes. Then insert four expansion tubes into the holes using a rubber hammer. Next insert the 4 screws through the mounting holes in the bracket, and then tighten the screws into the expansion tubes.

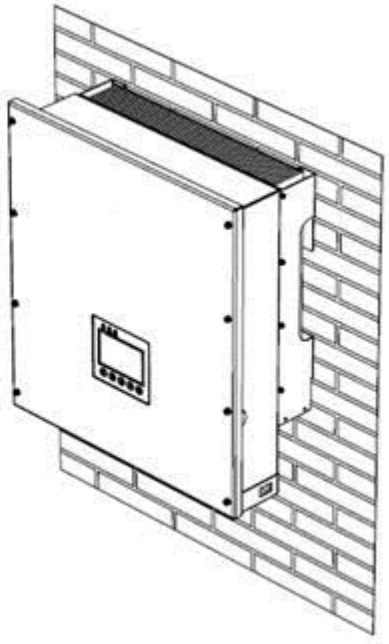


3) Check the 4 holes at the rear of the inverter. Then lift the inverter carefully, aligning the 4 holes in the inverter and the 4 hooks on the bracket, and finally lightly attach the inverter to the hooks.









4) Please carefully check the accessories in original carton to make sure every necessary part is used and nothing is missing during installation.

6. Electrical Connection

6.1 Safety

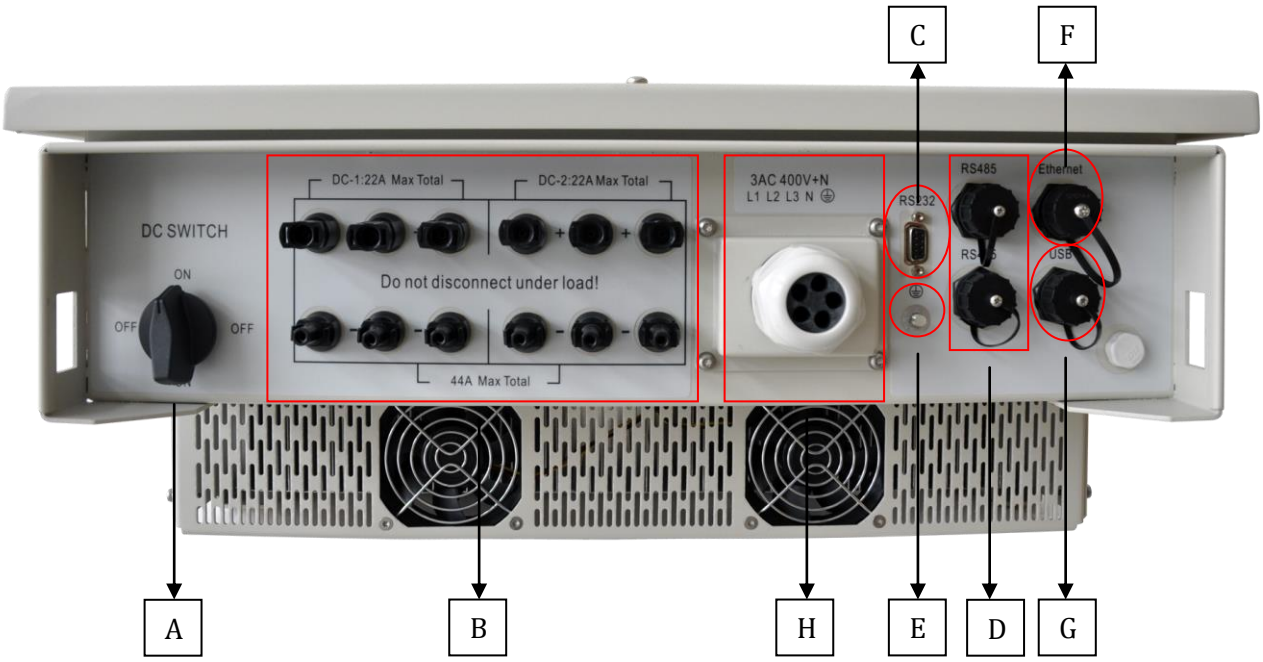
DANGER

DANGER to life due to potential fire or electricity shock.
When the inverter powered up, comply with all applicable national regulations and legislation concerning accidents prevention.
This inverter will be directly connected to a **HIGH VOLTAGE** power generation device; the installation must be performed by qualified personnel only in compliance with national and local standards, regulations and legislation.

NOTICE

Electrical connections must be carried out in accordance with the applicable regulations, such as conductor sections, fuses, and PE connections.

6.2 Overview of Connection Area



Object	Description
A	DC switch
B	Plug connectors for DC input.
C	RS232 interface
D	RS485 interface
E	Earthing
F	Ethernet interface
G	USB interface
H	Terminal for grid connection (AC output)

6.3 DC Side Connection

DANGER

DANGER to life due to potential fire or electricity shock.

NEVER connect or disconnect the connectors under load.

NOTICE

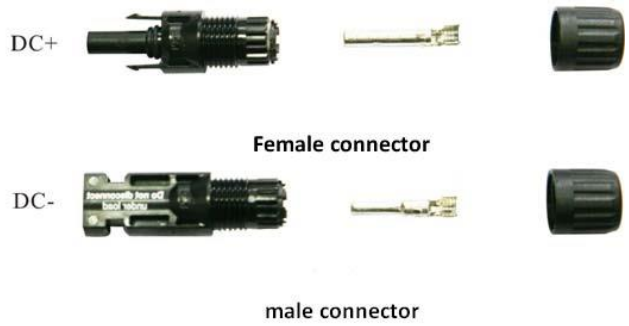
The DC Switch (**Optional**) may be integrated or external to Inverter, and it can be used to connect or disconnect the DC source from the Inverter.

For Z10I13KDT, Z10I17KDT and Z10I20KDT, there are two MPP Tracker, and the DC characteristics of them are illustrated as the following table.

Inverter Type	MPP Tracker	Max. DC Power	Max. DC Voltage	Max. DC Current
Z10I13KDT	2	13500W	1000V	22/11A
Z10I17KDT		17600W		22/22A
Z10I20KDT		21200W		22/22A

Connection procedure by MC4:

Connect the PV modules and inverter using MC4 connectors below. Connect the positive and negative terminals from the PV modules to positive (+) terminals and negative (-) terminals on Z10 series inverter



Connection Procedure:

1) Switch off the DC breaker and secure against being switched back on inadvertently.

2) Strip the cable 7 mm.

3) Insert striped cable into contact barrel and insure all conductor strands are captured in the contact barrel.

4) Crimp contact barrel by using a hex crimping die. Put the contact barrel with striped cable in the corresponding crimping notch and crimp the contact.

5) Insert contact cable assembly into back of the male and female connector. A “click” should be heard or felt when the contact cable assembly is seated correctly.

6) Wrest the cap by using the torque of 2.6~2.9NM.

7) After wrest the cap tightly, align the 2 half connectors and mate them together by hand until a “click” is heard or felt.

8) When the separation of connector is necessary, use the specified wrench tool to separate. Please make sure the wedge side of the fingers face the male connector and push the tool down. Then separate the connector by hand. See below figure.

9) If input connector is not enough, adopt“ Y ”connector (optional) just as below:

10) Please use sealing caps for tight sealing of unplugged PV connectors.

If using H4 connector, the operating procedure is similar as that of MC4 connector.

6.4 AC side connection

DANGER

DANGER to life due to potential fire or electricity shock.

NEVER connect or disconnect the connectors under load.

NOTICE

DC Switch (**Optional**) may be integrated or external to Inverter, and it can be used to connect or disconnect the DC source from Inverter.

Connection Procedure

1) Strip the cable 12mm

2) Insert the striped cable into cord end terminal and insert the assembly into barrel.

Then the line will like the picture below.

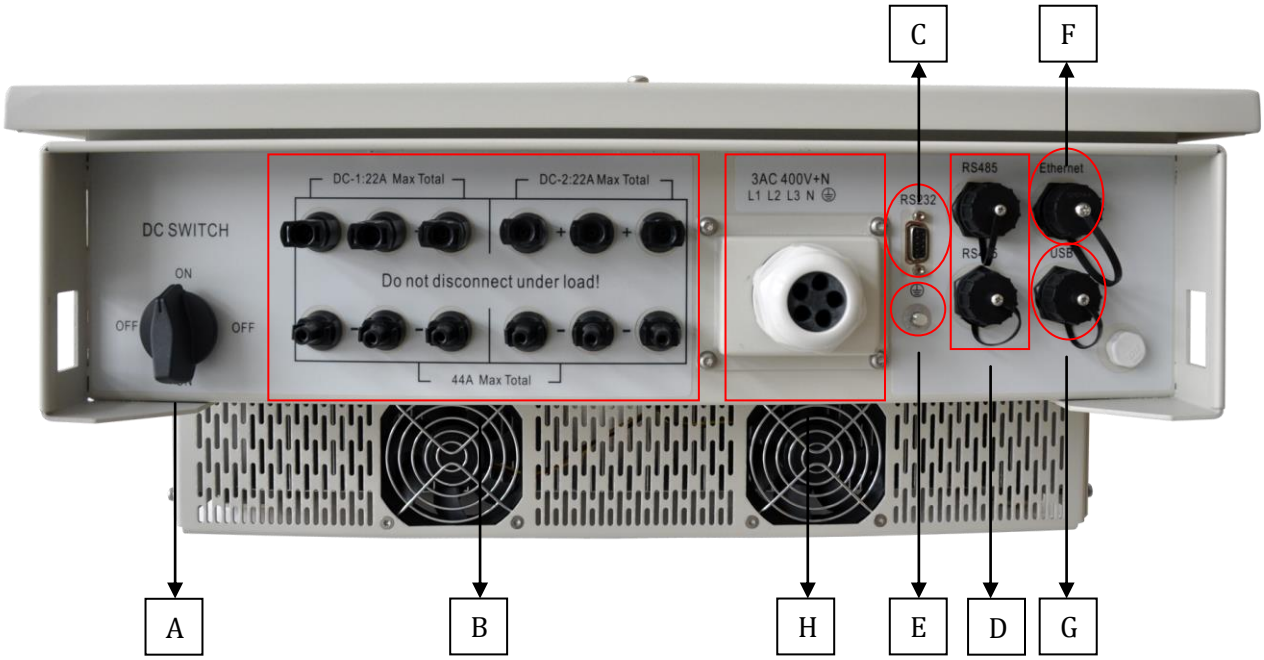
3) Insert the finished 5 lines into AC cover assembly with the following sequence：

Open the plastic cover, use slot type screwdriver to press the shrapnel in the indicated position, and then put the line in the right hole, please note the sequence of the line shall in the right order: L1,L2,L3,N,PE

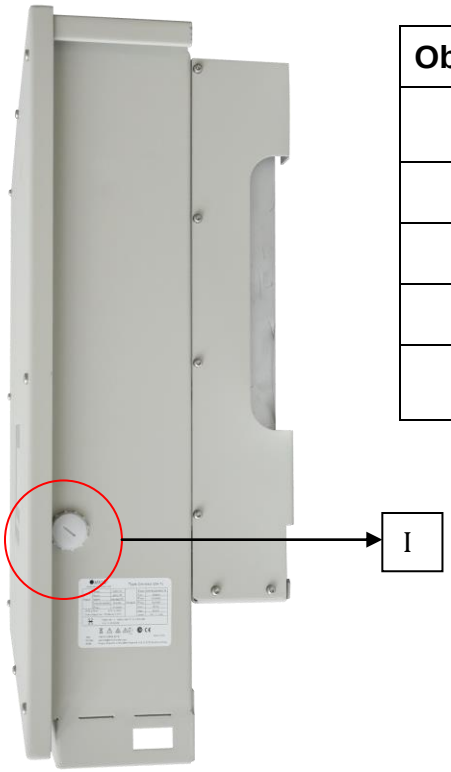
Cover the assembly, tightly screwed and then screw the cable gland

6.5 Communication and Monitoring connector

There are RS232/RS485, Ethernet and USB interface in the bottom side of the Z10 series inverter as shown in the following figure:



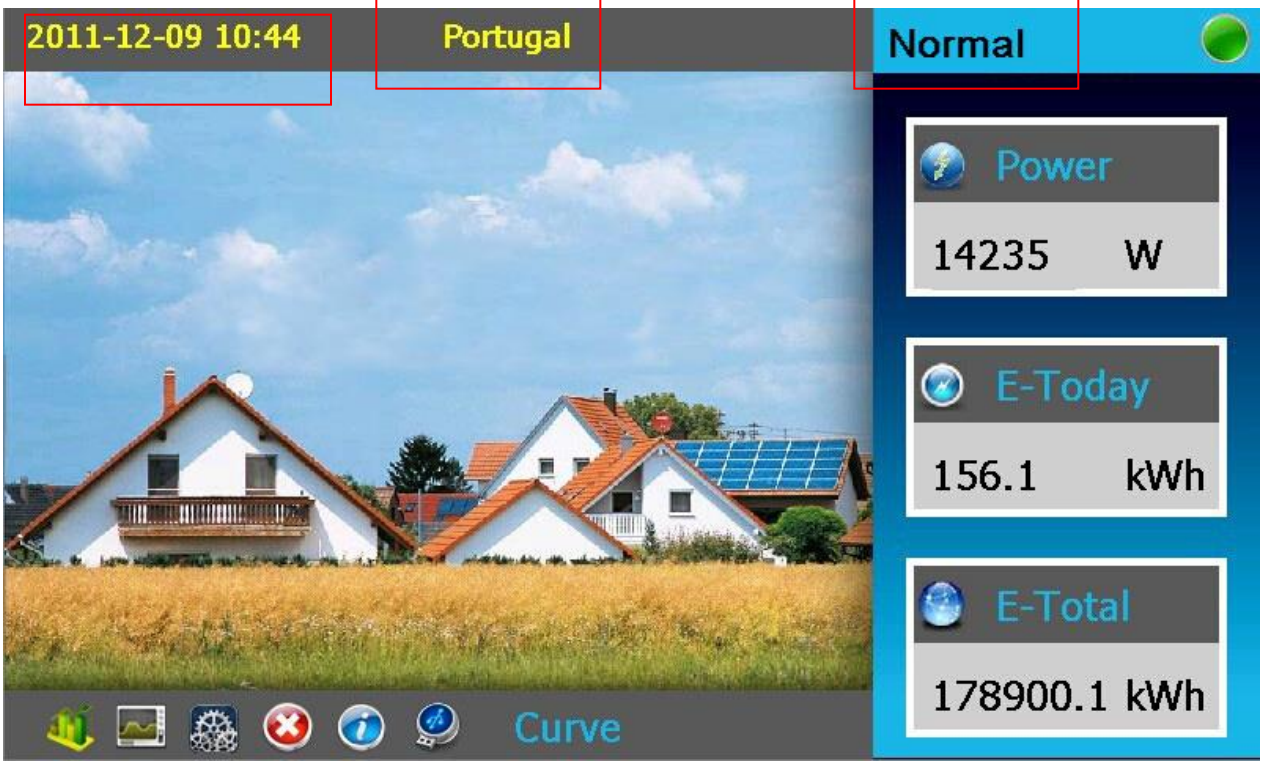
The function is as below:



Object	Description	Function
C	RS232 interface	Update the Software Version of the inverter
D	RS485 interface	Connect with PMB
F	Ethernet interface	Connect with Ethernet
G	USB interface	Connect with USB
I	Display interface	Update and reset switch for display

7. Display

7.1 Main interface



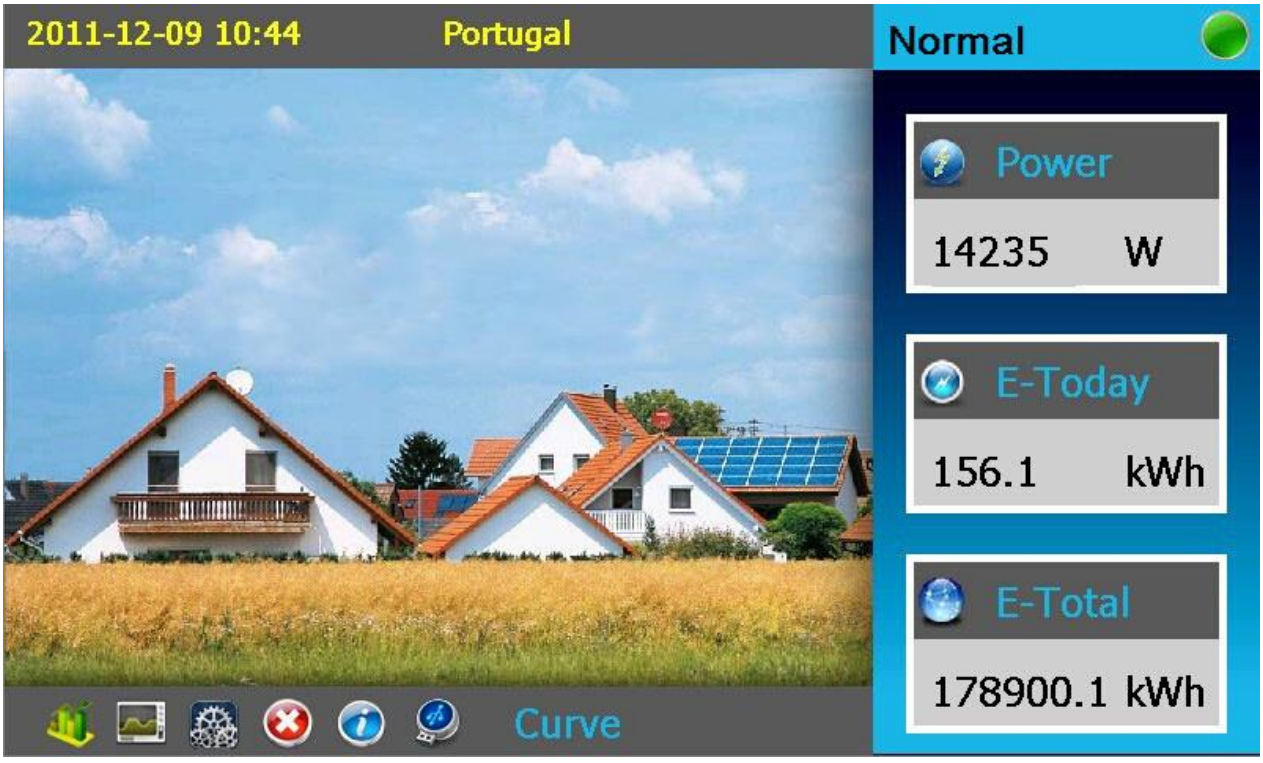
Object	Description
Time (e.g.2011-12-09 10:44)	Current date and time
Safety(e.g. Portugal)	Current safety regulation selected
Operation (e.g. normal)	Current operation condition
E-today	The energy generated today in kilo watt hours (kWh)
E-total	The energy generated since starting up the inverter (kWh)

The LCD panel is integrated in the front lid of the inverter, so it is easy for the user to check and set the data. In addition, the user can press the function key to illuminate the LCD screen.

NOTICE

The Z10 series inverter is not an aligned measuring instrument for current, voltage or power consumption. A slight deviation of a few percent points is inherent to the system; the results from the inverter cannot be used for grid balance calculations. An aligned meter will be required to make calculations for the utility company.

7.2 LCD Display

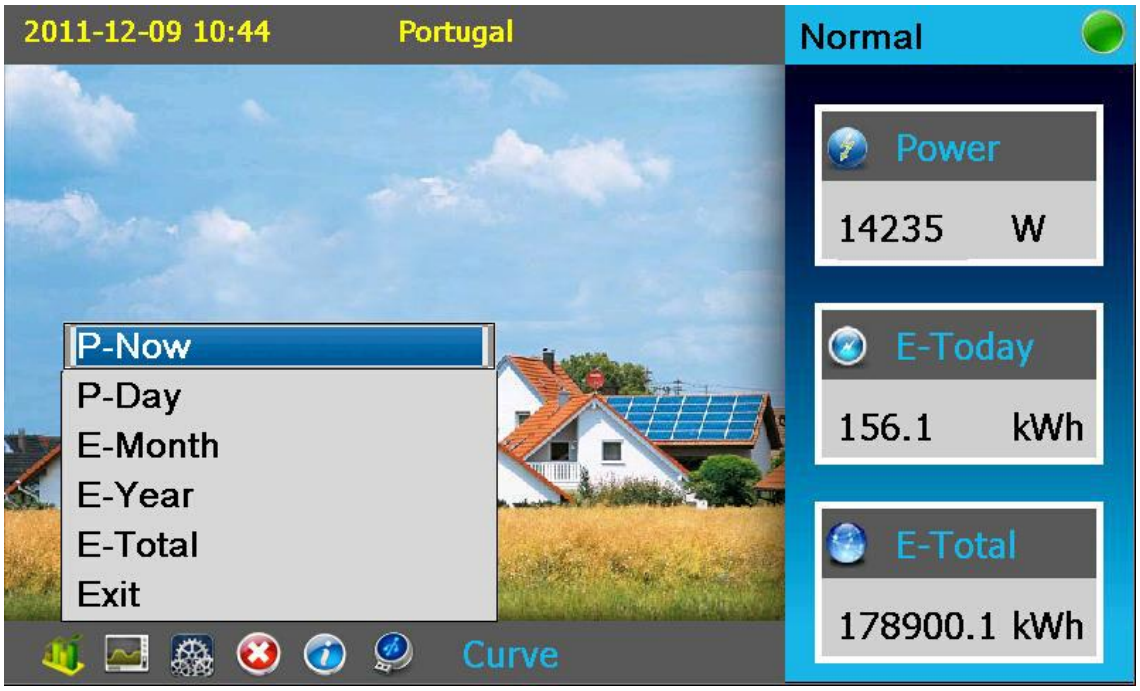


7.2.1. Curve

a. P-Now

Draw curve of current power:

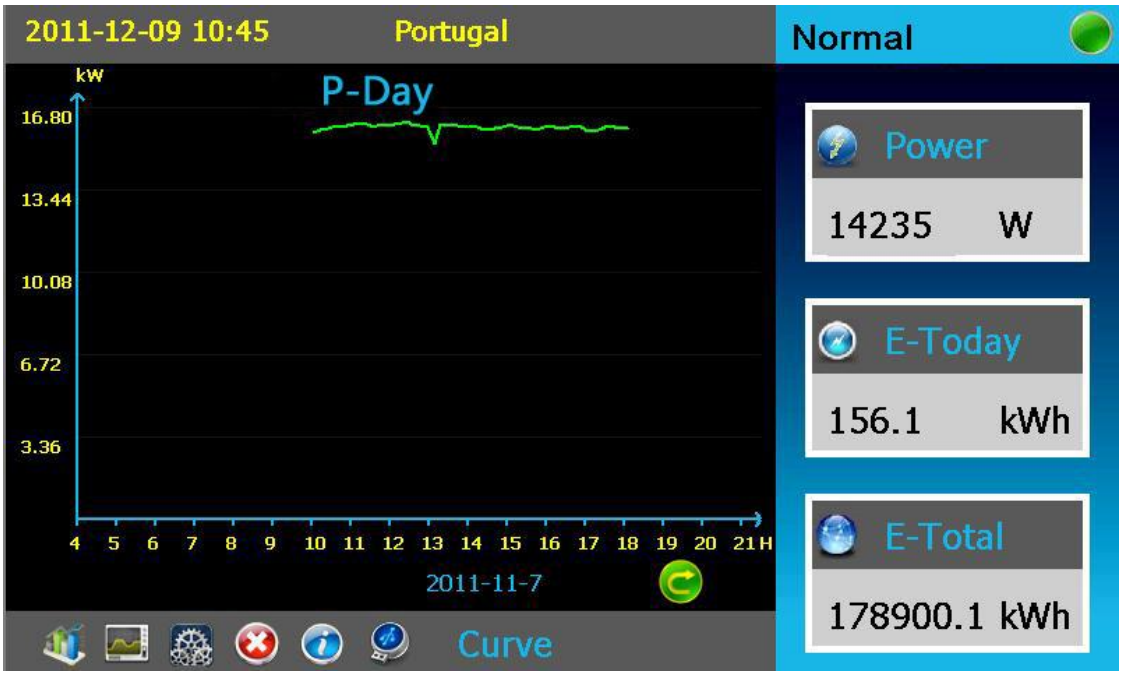
Click “Curve”----“P-Now”



b. P-Day

Draw curve of one day's power:

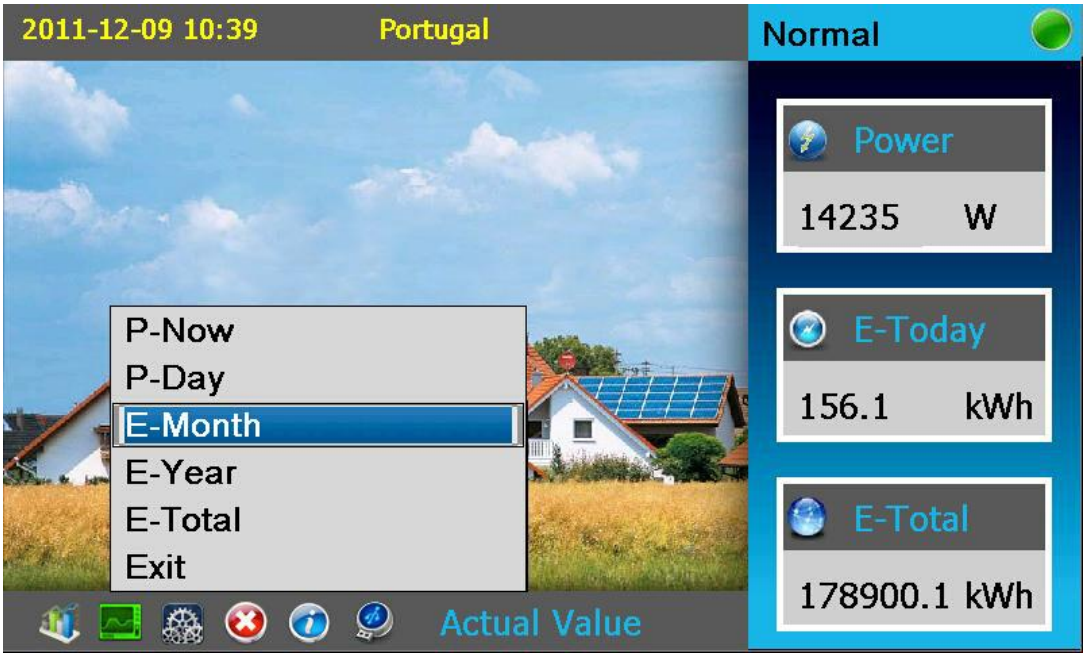
Click "Curve"----"P-Day"



c. E-Month

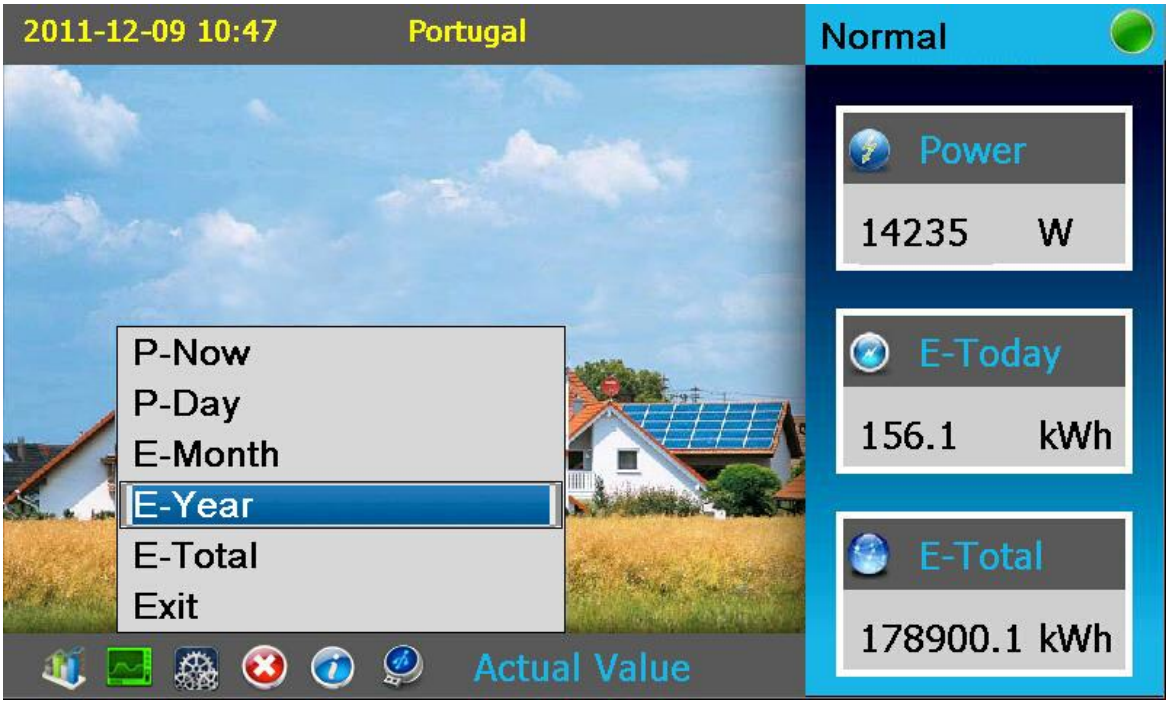
Show one month's generated energy:

Click "Curve" ---- "E-Month"



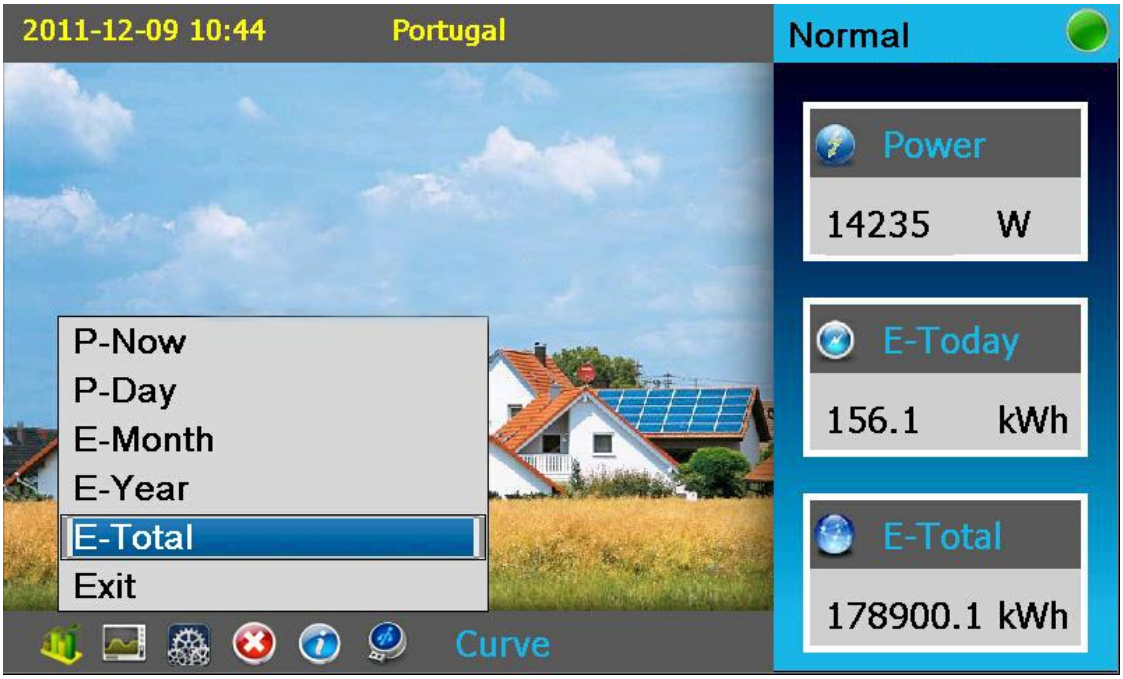
d. E-Year

Draw curve of one year's generated energy:
Click "Curve"----"E-Year"



e. E-Total

Draw curve of every year's generated energy:
Click "Curve"----"E-Total"

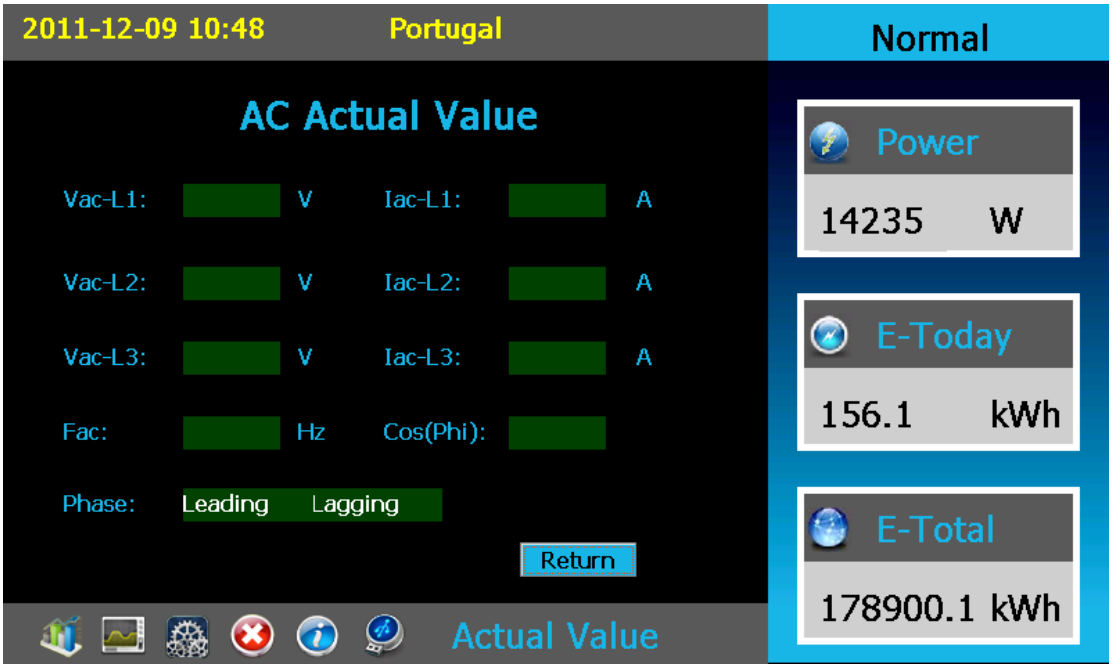


7.2.2. Parameters

a. AC Parameters

Show AC parameter：

Click “Actual Value”---“AC Actual Value”

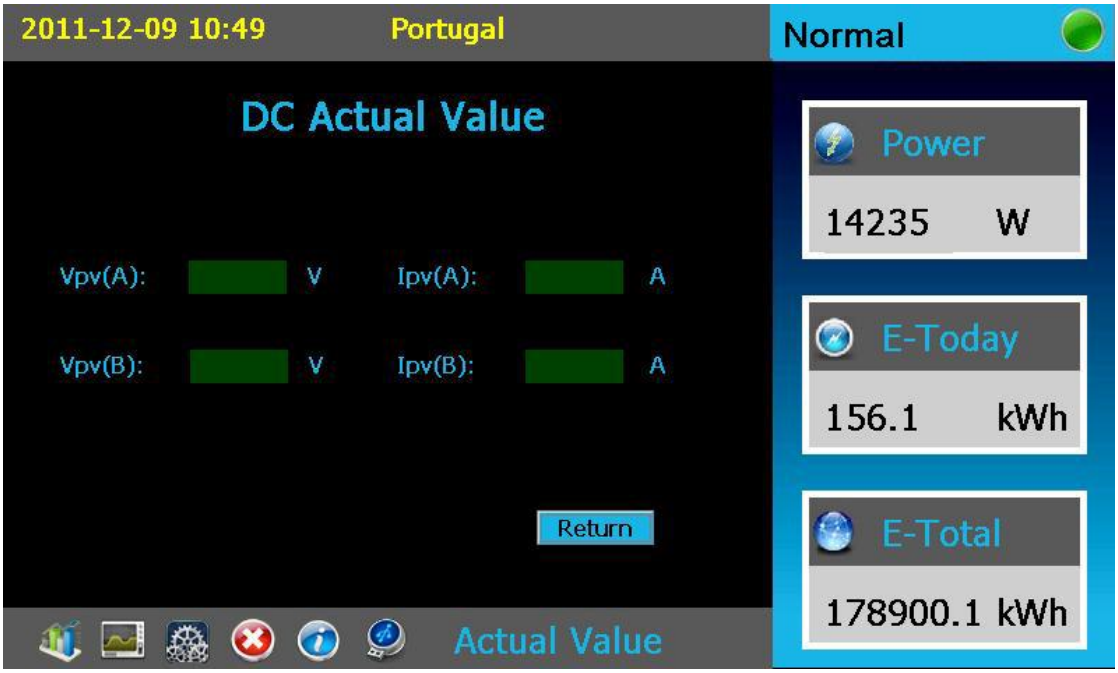


b. DC Parameters

Show DC parameter, including following items:

Vpv (1-2)，Ipv(1-2)

Click “Actual Value” --- “DC Actual Value”

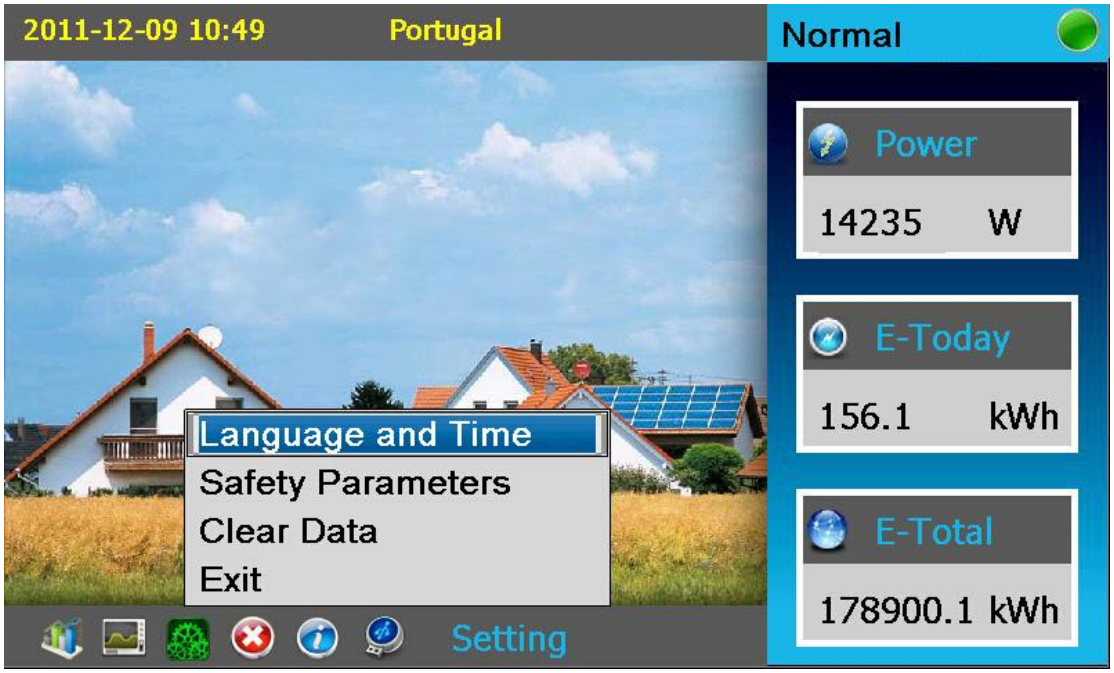


7.2.3. Tools & Options

a. Language and Time

Setting of language & time

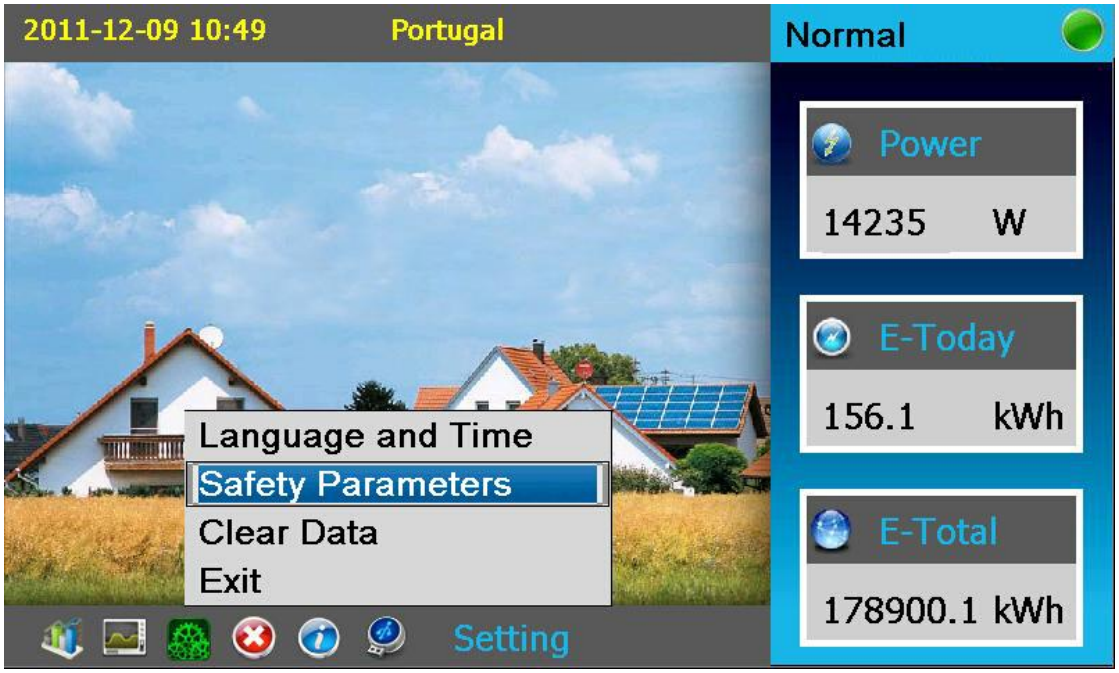
Click “Setting” ----“Language and Time”

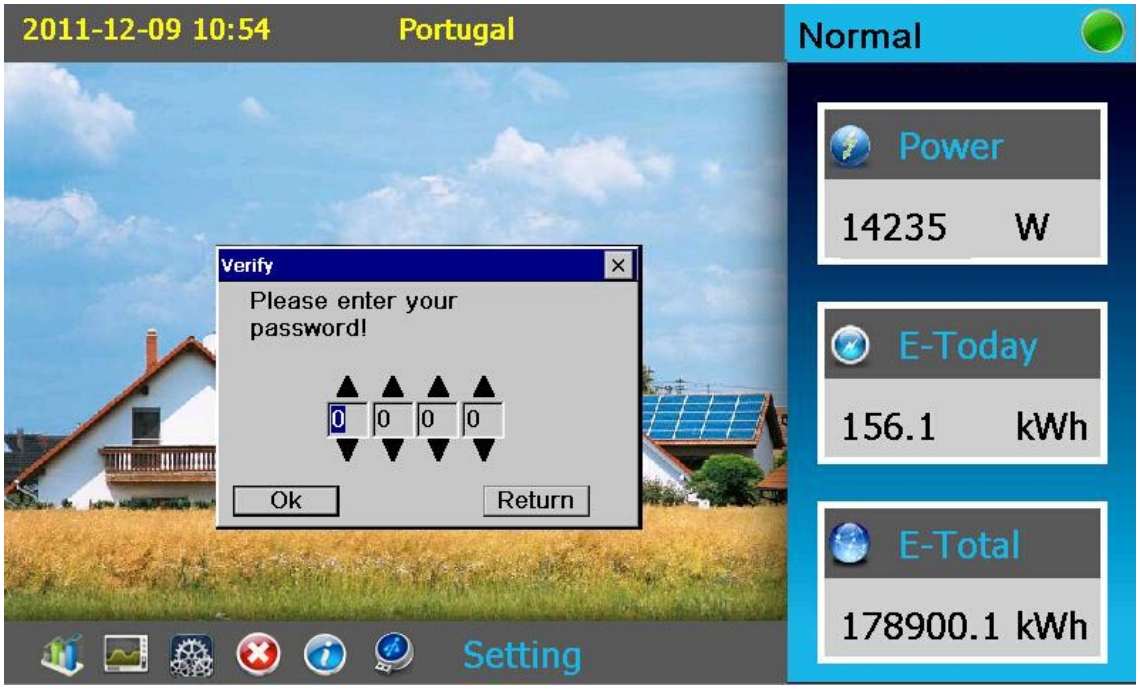


b. Safety Parameters

Setting of safety parameters:

Click “Setting” ----“Safety Parameters”。



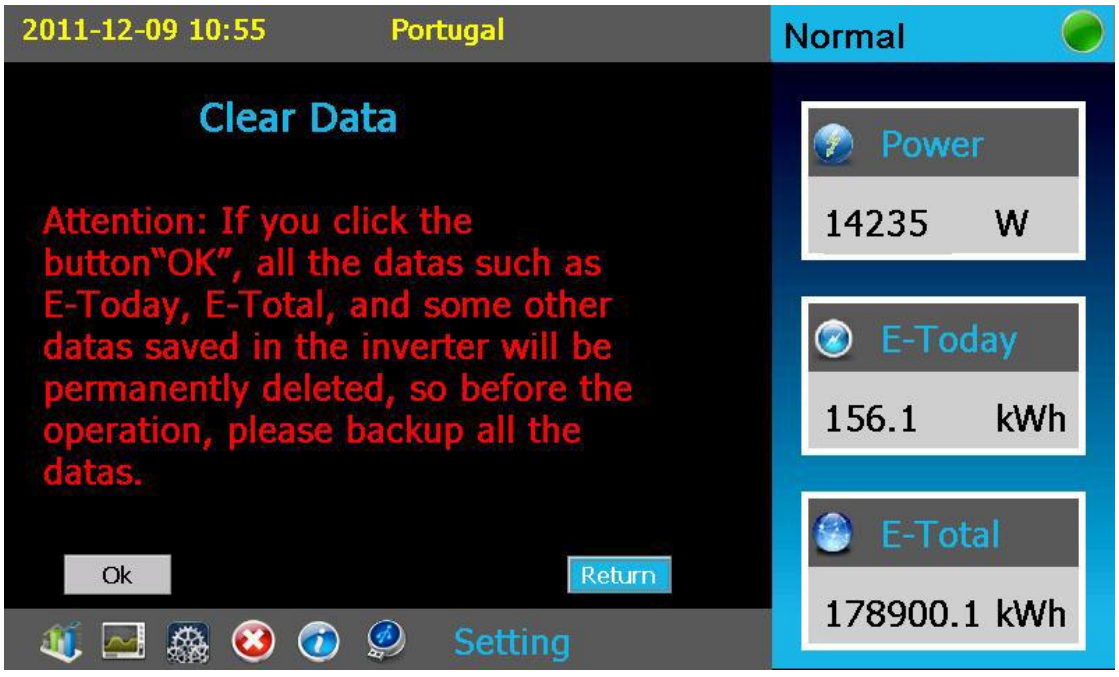


c. Clear Data

Clear Log：

Click “Setting” ----“Clear Data”

2011-12-09 10:54
Portugal
Normal
Verify
Please enter your password!
0 0 0 0
Ok
Return
Power
14235 W
E-Today
156.1 kWh
E-Total
178900.1 kWh
Setting


2011-12-09 10:55
Portugal
Normal
Clear Data
Attention: If you click the button"OK", all the datas such as E-Today, E-Total, and some other datas saved in the inverter will be permanently deleted, so before the operation, please backup all the datas.
Ok
Return
Power
14235 W
E-Today
156.1 kWh
E-Total
178900.1 kWh
Setting

7.2.4. Information

Device Info

Kinds of inverter：13K/17K/20K

Vision number & serial number:

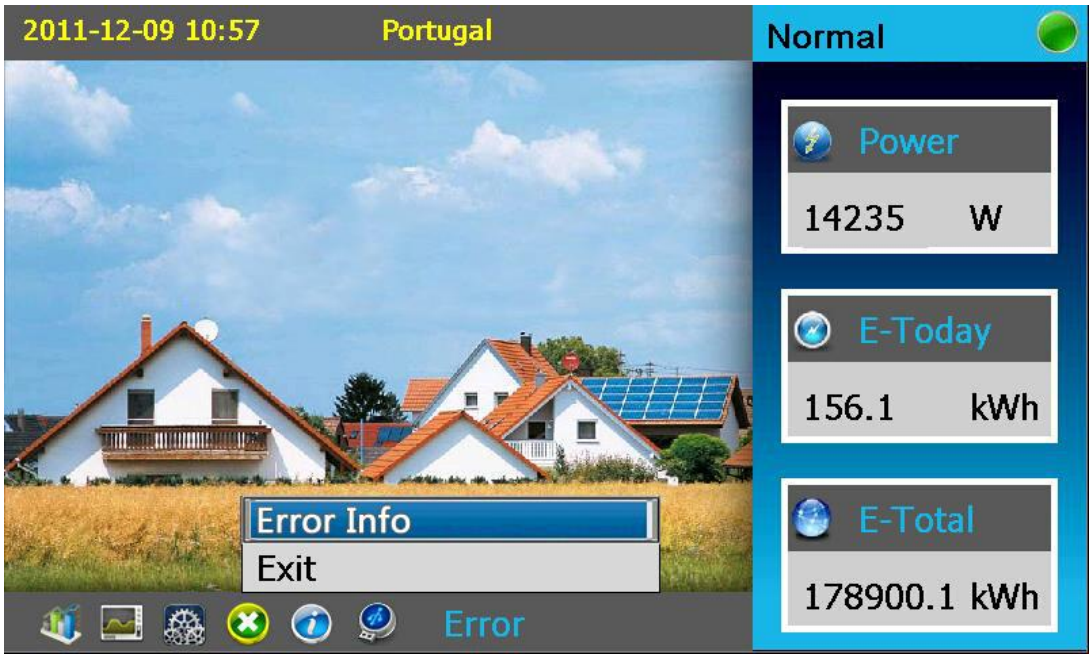
Click “Information” ---- “Device Info”

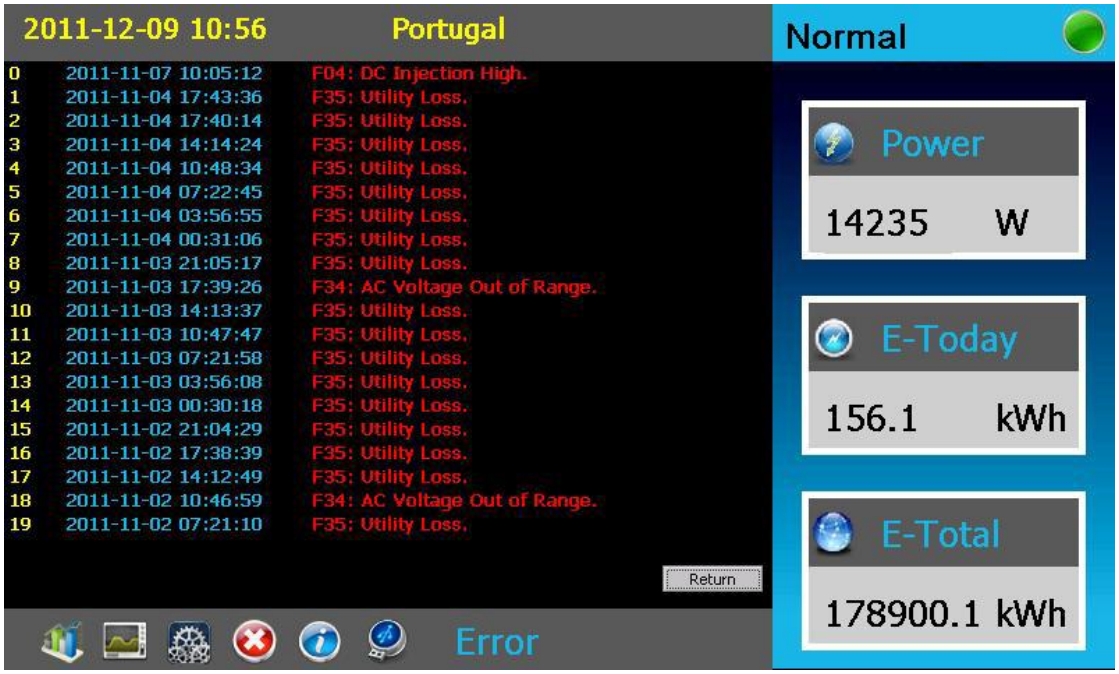
7.2.5. Error

Error Info

Show Error information:

Click “Error” ---- “Error Info”





7.2.6. Update

Flash

It's used for updating the inverters' firmware. After putting inverter's ROM documents to related catalogue, users can update the Firmware by clicking the button.

7.2.7. State Information

State	Display	State information
Wait	Waiting	Initialization & waiting
	Connect Sec.	Connect
Normal	Normal	Normal state
Fault	SPI Failure: Communication Fails between M-S	SPI Failure: Communication Fails between M-S
	EEPROM R/W Fail	EEPROM R/W Fail
	Relay-Check Fail	Relay-Check Fail
	DC Injection High	DC Injection High
	The result of Auto Test Function is fail	The result of Auto Test Function is fail
	DC bus is too high	DC bus is too high
	The voltage reference inside is abnormal	The voltage reference inside is abnormal
	AC HCT Failure	AC HCT Failure
	GFCI Device Failure	GFCI Device Failure
	Device fault	Device fault
	M-S Version Unmatched	M-S Version Unmatched
	Fac Failure: Fac Out of Range	Fac Failure: Fac Out of Range
	AC Voltage Out of Range	AC Voltage Out of Range

	Utility Loss	Utility Loss
	GFCI Failure	GFCI Failure
	PV Over Voltage	PV Over Voltage
	Isolation Fault	Isolation Fault
	Fan Lock	Fan Lock
	Over Temperature in Inverter	Over Temperature in Inverter
	Consistent Fault: Vac differs for M-S	Consistent Fault: Vac differs for M-S
	Consistent Fault: Fac differs for M-S	Consistent Fault: Fac differs for M-S
	Ground I differs for M-S	Ground I differs for M-S
	DC inj. differs for M-S	DC inj. differs for M-S
	Consistent Fault: Fac, Vac Differs for M-S	Consistent Fault: Fac, Vac Differs for M-S
	High DC Bus	High DC Bus
Flash	Flashing	Update inverter

About the further information for each fault, please reference to Chapter “10.TROUBLESHOOTING”.

8. Troubleshooting

	LCD display	Possible actions
Correctable Fault	Isolation Fault	1. Check the impedance between PV (+) & PV (-) and the inverter is earthed. The impedance must be greater than 2.4MΩ. 2. Check whether the AC-side has contacts with earth.
	Ground I Fault	1. The ground current is too high. 2. After cut off the AC side connection, unplug the inputs from the PV generator and check the peripheral AC system. 3. After the cause is cleared, re-plug the PV panel and AC connection, and check PV-Inverter status.
	Grid Fault Fac Failure: Fac Out of Range AC Voltage Out of Range	1. Wait for a moment, if the grid returns to normal, PV-Inverter automatically restarts. 2. Make sure grid voltage and frequency meet the specifications.
	Utility Loss	1. Grid is not connected. 2. Check grid connection cables. 3. Check grid usability. 4. If grid is ok, and the problem persists, maybe the fuse in the inverter is open, please call service.
	Over Temperature in Inverter	1. The internal temperature is higher than specified normal value. 2. Find a way to reduce the ambient temperature. 3. Or move the inverter to a cooler environment.
	PV Over Voltage	1. Check the open PV voltage, see if it is greater than or too close to 1000VDC (for Z10I13KDT or Z10I17KDT or Z10I20KDT). 2. If PV voltage is less than 1000VDC, and the problem still occurs, please call local service.

Permanent Fault	Consistent Fault: Fac differs for M-S Vac differs for M-S Fac, Vac Differs for M-S Ground I differs for M-S DC inj. differs for M-S	Disconnect PV (+) or PV (-) from the input, restart the inverter.
	AC Relay Check Fail	1. Disconnect ALL PV (+) or PV (-). 2. Wait for a few seconds. 3. After the LCD switches off, reconnect and check again. 4. If the problems remain please call local service.
	High DC bus	
	DC Injection High	
	EEPROM R/W Fail	
	Fan Lock	
	M-S Version Unmatched	
	SPI Failure: Communication Fails between M-S	
	AC HCT Fault	
	GFCI Device Failure	

9. Warranty

Dear Customer:
Thanks for choosing Z10 series products.

The warranty period for inverter is 60 months as standard, starting from the date of the purchase invoice date marked.

- Terms and Conditions

BLD Solar offers 60 months from the date of purchase from retailer for Z10I13KDT/ 17KDT/20KDT on-grid inverters, subject to the conditions listed below. Please note that this does not apply for the accessories. If a product is suspected of being defective during the specified Omnik factory warranty period then BLD Solar will initially perform a pre-qualification of the issue.

If a product is determined to be defective then BLD Solar will appoint a local installer who will conduct:

On-site inspection & repair or;
Exchange for same or similar replacement product

In the latter case, the remainder of the warranty entitlement will be transferred to the repaired or replacement product. In such an event, you do not receive a new certificate, as your entitlement is documented at BLD Solar.

- Exclusion of Liability

Circumstances where warranty is not provided

Inverter damaged during transportation, installation, usage, connection, non compliance with the instruction manual or other man-made damage
Operate the products beyond the applicable safety regulations
The warranty card has been altered or its date is hard to recognize
Change, modification of repair attempts of the product without authorization
Product description nonconformity from the content of warranty card
Information on the original nameplate missing or not clear enough to identify the delivery date and product model
Use non-designed accessories
Improper PV system design
Force majeure (e.g. lightening, earthquake, flood or fire)

Cosmetic changes to the unit from environmental conditions or accidents

From the day the inverter is purchased, please correctly fill in the Warranty Card and submit to the appointed installers to sign/stamp and date. Any changes need to be made by the appointed installers. Please keep good custody of your Warranty Card and present it when you need the warranty service and keep the record provided by the service staff.

10. Abbreviation

LCD	Liquid Crystal Display
LED	Light Emitting Diode
MPPT	Maximum Power Point Tracking
PV	Photovoltaic
Vdc	Voltage at the DC side
Vac	Voltage at the AC side
Vmpp	Voltage at the Maximum Power Point
Impp	Amperage at Maximum Power Point
AC	Alternating Current (Form of electricity supplied by Utility Company)
DC	Direct Current (Form of electricity generated by PV modules)
DC Switch	Switch in the DC Circuit. Disconnects DC source from Inverter. May be integrated or external to Inverter.

11. Contact

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